Serial No.: 10/099,769 Examiner: A. Oltmans
Filing Date: March 14, 2002 Art Unit: 1742

1 – 43 (cancelled)

44. (Previously presented) A method of forming a conversion layer on a metallic surface comprising the steps of: treating the metallic surface with an aqueous treating solution comprising:

(a) a source of tungstate ions;

(b) a soluble material comprising zirconium; and

(c) 5 and 500 parts per million of a soluble aluminum salt; and thereafter drying and/or baking the treated metal surface.

45. (Previously presented) A method according to claim 44, wherein the aqueous treating solution further comprises ammonium hydroxide.

46. (Previously presented) A method according to claim 44, wherein the source of tungstate ions is selected from the group consisting of ortho-tungstates, meta tungstates and para-tungstates, polytungstates, heteropolytungstates isopolytungstates, peroxytungstates, and combinations thereof.

47. (Previously presented) A method according to claim 46, wherein the source of tungstate ions is selected from the group consisting of sodium, potassium, lithium, calcium, cerium, barium, magnesium, strontium, hydrogen and ammonium tungstate.

48. (Previously presented) A method according to claim 47, wherein the source of tungstate ions is ammonium meta-tungstate.

49. (Previously presented) A method according to claim 44, wherein the soluble material comprising zirconium is dihydrogen hexafluorozirconate.

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50. (Previously presented) A method according to claim 44, wherein the treating solution further comprises at least one of a surfactant, an accelerator, a dye, an organic polymer, a buffering agent, and a pH adjusting agent.

51. (Previously presented) An aqueous conversion coating composition comprising a source of tungstate ions, a soluble material comprising zirconium, and 5 to 100 parts per million of a soluble aluminum salt.

52. (Previously presented) A composition according to claim 51, wherein the aqueous treating solution further comprises ammonium hydroxide.

53. (Previously presented) A composition according to claim 51, wherein the source of tungstate ions is selected from the group consisting of ortho-tungstates, meta tungstates and para-tungstates, polytungstates, heteropolytungstates, isopolytungstates, peroxytungstates, and combinations thereof.

54. (Previously presented) A composition according to claim 53, wherein the source of tungstate ions is selected from the group consisting of sodium potassium, lithium, calcium, cerium, barium, magnesium, strontium, hydrogen and ammonium tungstate salts.

55. (Previously presented) A composition according to claim 54, wherein the source of tungstate ions is ammonium meta-tungstate.

56. (Previously presented) A composition according to claim 51, wherein the soluble material comprising zirconium is dihydrogen hexafluorozirconate.

57. (Previously presented) A composition according to claim 51, wherein the treating solution further comprises at least one of a surfactant, an accelerator, a dye, an organic polymer, a buffering agent, and a pH adjusting agent.

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58. (Currently amended) A method according to claim [1] 44 wherein the soluble aluminum salt is selected from the group consisting of aluminum ammonium chloride, aluminum ammonium sulfate, aluminum nitrate, aluminum potassium sulfate, and aluminum sulfate.

59. (Cancelled)

60. (New) A method of forming a conversion layer on a metallic surface comprising the steps of: treating the metallic surface with an aqueous treating solution comprising:

(a) a source of tungstate ions;

(b) a soluble material comprising zirconium; and

(c) aluminum ions; and

thereafter and/or baking the treated metal surface.

61. (New) A method according to claim 60, wherein the aqueous treating solution further comprises ammonium hydroxide.

62. (New) A method according to claim 60, wherein the source of tungstate ions is selected from the group consisting of ortho-tungstates, meta-tungstates and para-tungstates, polytungstates, heteropolytungstates, isopolytungstates, peroxytungstates, and combinations thereof.

63. (New) A method according to claim 60, wherein the source of tungstate ions is selected from the group consisting of sodium, potassium, lithium, calcium, cerium, barium, magnesium, strontium, hydrogen and ammonium tungstate salts.

64. (New) A method according to claim 63, wherein the source of tungstate ions is ammonium meta-tungstate.

65. (New) A method according to claim 60, wherein the soluble material comprising zirconium is dihydrogen hexafluorozirconate.

66. (New) A method according to claim 60, wherein the treating solution further comprises at least one of a surfactant, an accelerator, a dye, an organic polymer, a buffering agent, and a pH adjusting agent.

67. (New) An aqueous conversion coating composition comprising a source of tungstate ions, a soluble material comprising zirconium, and a soluble aluminum salt.

68. (New) A Composition according to claim 67, wherein the aqueous treating solution further comprises ammonium hydroxide.

69. (New) A composition according to claim 67, wherein the source of tungstate ions is selected from the group consisting of ortho-tungstates, meta-tungstates and para tungstates, polytungstates, heteropolytungstates, isopolytungstates, peroxytungstates, and combinations thereof.

70. (New) A composition according to claim 69, wherein the source of tungstate ions is selected from the group consisting of sodium, potassium, lithium, calcium, cerium, barium, magnesium, strontium, hydrogen and ammonium tungstate salts.

71. (New) A composition according to claim 70, wherein the source of tungstate ions is ammonium meta-tungstate.

72. (New) A composition according to claim 67, wherein the soluble material comprising zirconium is dihydrogen hexafluorozirconate.

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73. (New) A composition according to claim 67, wherein the treating solution further comprises at least one of a surfactant, an accelerator, a dye, an organic polymer, a buffering agent, and a pH adjusting agent.

74. (New) A method according to claim 60 wherein the soluble aluminum salt is selected from the group consisting of aluminum ammonium chloride, aluminum ammonium sulfate, aluminum nitrate, aluminum potassium sulfate, and aluminum sulfate.